PDR RID Report

Date Last Modified 8/11/95
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Document

RID ID PDR 136
Review CSMS
Originator Ref
Priority 1

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Category Name System-level
Actionee Project
Sub Category RMA
Subject Re-examination of RMA specifications

Description of Problem or Suggestion:

Many of the reliability criteria that CSMS is required to support appears to be inconsistent with criteria in related areas, potentially resulting in excessively stringent implementations that waste money. For example, DAAC LSM system availability requirements dictate less than 20 minutes of downtime per year, yet many DAAC facilities doe not have facility electrical power support that can approach this level of reliability. Either the CSMS requirement is excessively hard, or the DAAC facilities require significant upgrades.

Originator's Recommendation

A continuing effort needs to be put into place to verify the need for strong RMA criteria, and comparing RMA criteria among related elements.

GSFC Response by: Ellen Herring
GSFC Response Date 8/9/95

The level 3 availability requirements for the IMS, ESN, User access, and DAAC functions are listed below.

EOSD3700 ECS functions shall have an operational availability of 0.96 at a minimum (.998 design goal) and an MDT of four (4) hours or less (1.5 hour design goal), unless otherwise specified.

EOSD3930 The user interfaces to Information Management System (IMS) services at individual Distributed Active Archive Center (DAAC) sites shall have an operational availability of 0.993 at a minimum (.9997 design goal) and an MDT of two (2) hours or less (1.6 hour design goal).

IMS-0020 The IMS shall always be accessible to users and an informational status message describing the current availability status of ECS services and the predicted time for resumption of services which are temporarily unavailable shall be provided.

EOSD3940 The SDPS function of Information Searches on the ECS Directory shall have an operational availability of 0.993 at a minimum (.9997 design goal) and an MDT of two (2) hours or less (1.4 hour design goal).

EOSD3970 The SDPS function of Information Searches on Local Holdings shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).

EOSD3990 The SDPS function of Data Order Submission Across DAACs shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).

EOSD4010 Each computer providing product generation shall have an operational availability of 0.95 at a minimum (.9995 design goal).

EOSD4030 The SMC function of gathering and disseminating system management information shall have an operational availability of .998 at a minimum (.999998 design goal) and an MDT of 20 minutes or less (5 minutes design goal), for critical services.

EOSD4035 The ESN shall have no single point of failure for functions associated with network databases and configuration data.

EOSD4036 The operational availability of individual ESN segments shall be consistent with the specified operational availability of the supported ECS functions.

SMC-8840 The SMC shall have the capability to generate detailed and summary reports indicating the performance of ground resources, including, at a minimum: a. Resource availability b. Reason for down time c. Resource utilization d. Ability of resource to meet performance criteria e. Short and long-term trend analysis and capacity planning results

The requirements dealing with the DAAC management functions are covered by requirements 4030 and 8840. 4030 requires an availability of .998 with an MDT of 20 minutes. This will allow the function to go down on the average once each 7 days for 20 minutes. To achieve the MDT of 20 minutes will most likely require the function to be implemented with a backup which can be

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Requirement IMS-0020 implies a continuous availability of l for certain IMS functions. It is recognized that there is no design that will guarentee that "The IMS shall always be accessible". This requirment shall be reworded to clarify the real intent and to insure testability. The implementation of this requirement will also be monitored closely to ensure that it does not become an IMS system cost driver.

Requirement EOSD4035 call for redundant architecture. It is limited to ESN databases and configuration data. This limit should control the cost exposure and as such is probably a reasonable requirement.

The other requirements which have MDT's of greater than 2 hours and availability requirements of .999 or less can most likely be implemented with single string architecture and thus control costs.

Experience has demonstated that if MDT is kept above two hours or so you have a chance of implementing a system with single string architecture and you can rely on maintenance to repair the fault. If the MDT is shorter than two hours, the architecture will have to be redundant and the MDT jumps from hours to minutes because the switchover times are usually fast.

In summary, The level 3 availability requirements appear reasonable as stated in the documents. The level 2 requirement (1392) which dose not allow any single point failures in critical functions requires redundant architecture. This in turn results in availability numbers which are very high and MDTs which reflect switchover times which are relatively low. Redundant architecture will in most cases result in systems which are down only a few minutes each year. The implementation of 1392 should be monitored closely to ensure that it is applied to critical functions only.

HAIS Response by: Forman **HAIS Schedule**

HAIS R. E. Armstrong **HAIS Response Date**

Status **Closed** **Date Closed** **8/11/95** **Sponsor** **Herring**

****** **Attachment if any** ******